

THAT WHICH IS CLAIMED IS:

1. A free space optical (FSO) communications device comprising:

a plurality of power supplies having different respective output voltages;

an adaptive optics (AO) module comprising an AO housing and a deformable mirror carried thereby, said deformable mirror comprising an array of actuators each operating based upon a supplied voltage; and

a power controller for selectively driving said array of actuators using a desired one of said power supplies to conserve electrical power.

2. The FSO communications device of Claim 1 wherein said deformable mirror further comprises a reflective deformable member mounted on said array of actuators.

3. The FSO communications device of Claim 1 wherein said AO module further comprises a thermal stress isolation mount connecting said deformable mirror to said AO housing.

4. The FSO communications device of Claim 1 further comprising an interchangeable optical relay (OR) module comprising an OR housing and at least one OR device carried thereby, said OR housing and said AO housing being interchangeably connectable and establishing an optical path between said at least one OR device and said deformable mirror when connected.

5. The FSO communications device of Claim 4 wherein said at least one OR device of a given OR module provides a predetermined focal length range from among different focal length ranges for respective OR modules.

6. The FSO communications device of Claim 4 wherein said at least one OR device comprises a fixed telescopic lens device.

7. The FSO communications device of Claim 1 further comprising a base module connected to said AO module for providing relative movement between said base module and said OR module for optical beam aiming.

8. The FSO communications device of Claim 7 wherein said base module comprises a base housing and at least one positioner carried thereby.

9. The FSO communications device of Claim 8 wherein said base module further comprises a controller for controlling said at least one positioner and a remote station interface connected to said controller for permitting remote control of said at least one positioner.

10. A free space optical (FSO) communications system comprising:

first and second FSO communications devices aligned for optical communication therebetween, each comprising

a plurality of power supplies having different respective output voltages,

an adaptive optics (AO) module comprising an AO housing and a deformable mirror carried thereby, said deformable mirror comprising an array of actuators each operating based upon a supplied voltage, and

a power controller for selectively driving said array of actuators using a desired one of said power supplies to conserve electrical power.

11. The FSO communications system of Claim 10 wherein said deformable mirror further comprises a reflective deformable member mounted on said array of actuators.

12. The FSO communications system of Claim 10 wherein said AO module further comprises a thermal stress isolation mount connecting said deformable mirror to said AO housing.

13. The FSO communications system of Claim 10 wherein each of said first and second FSO communications devices further comprises an interchangeable optical relay (OR) module comprising an OR housing and at least one OR device carried thereby, each OR housing and respective AO housing being interchangeably connectable and establishing an optical path between said at least one OR device and said deformable mirror thereof when connected.

14. The FSO communications system of Claim 13 wherein said at least one OR device of a given OR module provides a predetermined focal length range from among different focal length ranges for respective OR modules.

15. The FSO communications system of Claim 13 wherein said at least one OR device comprises a fixed telescopic lens device.

16. The FSO communications system of Claim 10 wherein each of said first and second FSO devices further comprises a base module connected to said AO module for providing relative movement between said base module and said OR module for optical beam aiming.

17. The FSO communications system of Claim 16 wherein each base module comprises a base housing and at least one positioner carried thereby.

18. The FSO communications system of Claim 17 wherein each base module further comprises a controller for controlling said at least one positioner and a remote station interface connected to said controller for permitting remote control of said at least one positioner.

19. A power conservation method for a free space optical (FSO) communications device comprising an adaptive optics (AO) module comprising an AO housing and a deformable mirror carried thereby, the deformable

mirror comprising an array of actuators each operating based upon a supplied voltage, the method comprising:

providing a plurality of power supplies having different respective output voltages; and

selectively driving the array of actuators using a desired one of the power supplies to conserve electrical power.

20. The method of Claim 19 wherein the deformable mirror further comprises a reflective deformable member mounted on the array of actuators.

21. The method of Claim 19 wherein the AO module further comprises a thermal stress isolation mount connecting the deformable mirror to the AO housing.

22. The method of Claim 19 wherein the FSO communications device further comprises an interchangeable optical relay (OR) module comprising an OR housing and at least one OR device carried thereby, the OR housing and the AO housing being interchangeably connectable and establishing an optical path between the at least one OR device and the deformable mirror when connected.

23. The method of Claim 22 wherein the at least one OR device of a given OR module provides a predetermined focal length range from among different focal length ranges for respective OR modules.

24. The method of Claim 22 wherein the at least one OR device comprises a fixed telescopic lens device.

25. The method of Claim 19 wherein the FSO communications device further comprises a base module connected to the AO module for providing relative movement between the base module and the OR module for optical beam aiming.

26. The method of Claim 25 wherein the base module comprises a base housing and at least one positioner carried thereby.

27. The method of Claim 26 wherein the base module further comprises a controller for controlling the at least one positioner and a remote control interface connected to the controller for permitting remote control of the at least one positioner.